

SECTION J

SOLID WASTE MANAGEMENT UNITS AND AREAS OF CONCERN

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SECTION J – SOLID WASTE MANAGEMENT UNITS

J-1 CHARACTERIZE THE SOLID WASTE MANAGEMENT UNITS (SWMU) AND AREAS OF CONCERN (AOC) [40 Code of Federal Regulations {CFR} §270.14(d)(1)]

The D&Z facility includes five solid waste management unit (SWMU) groups and four areas of concern (AOC) based on the Resource Conservation and Recovery Act (RCRA) Facility Assessment (RFA):

- SWMU Group 9 – 1000 Area
- SWMU Group 10 – 1100 Area
- SWMU Group 17 – Open Detonation Field currently in operation
- SWMU Group 21 –
 - Closed Container Storage Areas 1813, 1914, 1915, 1916, 1917, 1958, 1961, 1974, and 1976
 - Container Storage Areas 1816, 1934, 1935, 1936, 1942, 1967, 1969, 1970, and 1979 to begin operation upon permit issuance
 - Container Storage Areas 2707, 2708, and 2709 currently in operation
- SWMU Group 24 – Burn Pad 6 Closed
- AOC Water Tower #4
- AOC Mercury Fulminate Disposal Site
- AOC Old Ammunition Storage Area
- AOC Quarry Operation

SWMU Group 9 (1000 Area)

The 1000 Area is in the northwestern portion of the D&Z facility south of Area 900 (see Figure J-1). It was originally used as a load and pack (LAP) facility for the 105 millimeter (mm) shell. In 1942, two underground storage tanks were installed near Building 1002 for fuel oil and sand storage. In 1952, three facilities (Buildings 1064, 1065, and 1066) were added, and the line was converted to a facility for loading the 105 mm artillery round with Composition B. Building 1008 was being used to treat wastewater from another area prior to discharge. The line was then used in production of 60 mm mortar and M795 projectiles (Final Historical Records Review, TechLaw 2006). Prior to construction of the industrial wastewater treatment system in the 1000 Area, wastewater was discharged into the unlined ditches and oxidation ponds.

An RFA was completed in 1989. The Phase I RCRA Facility Investigation (RFI) was completed in August 1994, and the Phase II RFI was completed in June 1998. Metals and explosives were detected in the soil in the 1000 Area during these investigations. Groundwater investigations completed in the 1000 Area include the Phase I RFI in 1992, the Phase II RFI in 1996, the 2011 Data Gap Study, and a 2004 Data Gap Study. Analytical data indicated that groundwater in the 1000 Area had been impacted by explosives.

In 1991, the two steel underground storage tanks (17,111 gallons each) near Building 1002 were removed along with the associated lines. Approximately 250 tons of petroleum contaminated material was also removed and taken to KSAAP landfill for treatment. These storage tanks were closed by KDHE with no further action needed.

Contaminated soil was also removed from the 1000 Area in spring 2003. According to the Corrective Measures Implementation Soil Data Summary Report prepared by the U.S. Army Corps of Engineers (USACE) in June 2008, trinitrotoluene (TNT)- and hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)-

contaminated soils were removed to industrial cleanup standards of 21 milligrams per kilogram (mg/kg) and 6 mg/kg, respectively. The closure report for this removal shows unrestricted use levels were attained in all excavated areas (USACE 2008). At four locations outside the limits of excavation, arsenic remains above unrestricted use levels; however, these concentrations are below the site-specific background level (5-year report).

In the Corrective Measures Decision (CMD) prepared by the U.S. Environmental Protection Agency (USEPA) in April 2006, the corrective measures selected for the 1000 Area included contaminated soil removal, long-term monitoring (LTM), and land use controls (LUC) as specified in Section D(1) of the property deed.

Currently, eight monitoring wells are gauged and sampled at this site: MW 2-3, MW 3-3, MW 4-3, MW 4-7S, MW 5-7D, MW 16-5, MW 17-5, and MW 18-5. In addition, the static water level is gauged at MW 1-3. The general direction of groundwater flow was to the south and southwest across the central part of SWMU 9 during the spring 2014 sampling event, consistent with locations of the SWMU 9 monitoring wells on the south slope of a low, broad topographic rise. The hydraulic gradient was approximately 0.017 feet per foot (ft/ft) (approximately 88 feet per mile [ft/mi]). The spring 2014 sampling event identified three contaminants of concern (COC) at concentrations exceeding their respective CMD cleanup goals. Arsenic exceeded the CMD cleanup goal of 10 micrograms per liter ($\mu\text{g/L}$) at 11 $\mu\text{g/L}$ in MW 3-3. This was less than the fall 2013 exceedance in this well. Lead exceeded the CMD cleanup goal of 15 $\mu\text{g/L}$ at 30 $\mu\text{g/L}$ in MW 17-5. This was the first exceedance of the cleanup goal by arsenic in MW 17-5. Elevated concentrations of total metals in groundwater may reflect presence of suspended sediment in groundwater. RDX exceeded the CMD cleanup goal of 0.61 $\mu\text{g/L}$ at 4.27 $\mu\text{g/L}$ in MW 18-5. RDX in this well was less than the RDX concentration detected in fall 2013; however, RDX concentrations showed no strong upward or downward trend in spring 2014.

Historically, volatile organic compounds (VOC) detections at SWMU 9 have been infrequent. During 2013 and spring 2014, no VOCs were detected at concentrations exceeding CDM cleanup goals. RDX has been detected above the CMD cleanup goal consistently in MW 18-5, and intermittently in MW 2-3 and MW 17-5. Although arsenic and lead were detected above CMD cleanup goals at SWMU 9, no metals had been detected at these concentrations historically. Elevated concentrations of total metals in groundwater may reflect presence of suspended sediment in groundwater.

LUCs for the 1000 Area are specified in Section D(1) of the property deed.

SWMU Group 10 (1100 Area)

The 1100 Area is within the south central portion of the D&Z facility, north of 20000 Road (see Figure J-1). This area encompasses approximately 124 acres of land and was recently used for production of Sensor Fuzed Weapons (SFW). The 1100 Area was originally used as a bomb line. In 1968, it was converted to a LAP facility for loading the cluster bomb unit with Composition B. In 1976, two underground storage tanks were installed near Building 1105 for fuel oil storage. In 1984, the line underwent conversion to produce combined effects munition (CEM) for the United States Air Force, and several buildings were demolished (TechLaw 2006).

An RFA was completed in 1989. The Phase I RFI was completed in August 1994, and the Phase II RFI was completed in June 1998. Metals and explosives were detected in the soil in the 1100 Area during these investigations. Groundwater investigations completed in the 1100 Area include the Phase I RFI in 1992, the Phase II RFI in 1996, the 2011 Data Gap Study, and a 2003 Supplemental Groundwater Investigation. Analytical data indicated that groundwater in the 1100 Area had been impacted by explosives, including RDX and related VOCs exceeding the action levels for groundwater.

In 1992, the two steel underground storage tanks (17,111 gallons each) near Building 1105 were removed along with the associated lines. No petroleum contamination was detected. These storage tanks were closed by KDHE with no further action needed. Based historical information, there was an underground storage tank that provided fuel for Building 1105 until the mid to late 1960s when the tank contents were removed and the tank was closed in place, it is thought that it was filled with sand. The closure was required in order to expand Building 1105's footprint. The current location of the closed tank is beneath the floor of Building 1105. No approvals from KDHE were required at that time.

Contaminated soil was removed from the 1100 Area in May 2003. At that time, approximately 1,200 cubic yards (cy) of metals-contaminated soil and 1,000 cy of explosives-contaminated soil were removed. According to the Corrective Measures Implementation Soil Data Summary Report prepared by USACE in June 2008, arsenic-, TNT-, and RDX-contaminated soils were removed to industrial cleanup standards of 23, 21, and 6 mg/kg, respectively. The closure report for this removal shows attainment of unrestricted use levels in all excavated areas (USACE 2008). At six locations outside the limits of excavation, concentrations of arsenic (two sites) or RDX (four sites) remain above unrestricted use levels.

In the CMD prepared by USEPA in April 2006, the corrective measures selected for the 1100 Area included contaminated soil removal, LTM for explosives-contaminated groundwater, and LUCs as specified in Section D(1) of the property deed.

Currently, 24 monitoring wells are gauged and sampled at this site: MW 1-9, MW 1-13, MW 2-9, MW 2-13, MW 3-9, MW 4-9, MW 5-9, MW 5-13, MW 6-7, MW 7-3, MW 7-7, MW 7-12, MW 8-12, MW 8-13, MW 9-3, MW 9-12, MW 10-3, MW 10-12, MW 11-12, MW 12-12, MW 12-13, MW 19-5, MW 20-5, and MW 21-5. In addition, static water levels are gauged at MW 8-3. The general direction of groundwater flow was to the south across the central part of SWMU 10 during the spring 2014 sampling event. The hydraulic gradient was approximately 0.013 to 0.15 ft/ft (or approximately 70 to 80 ft/mi). The spring 2014 sampling event identified four COCs at concentrations exceeding their respective CMD cleanup goals. 1,1-Dichloroethene (DCE) exceeded the CMD cleanup goal of 7 µg/L at 16 µg/L in MW 12-12. Tetrachloroethene (PCE) exceeded the CMD cleanup goal of 5 µg/L at 445 µg/L in MW 12-12. Trichloroethene (TCE) exceeded the CMD cleanup goal of 5 µg/L at 99 µg/L in MW 12-12. Concentrations of PCE, TCE, and 1,1-DCE exceeded cleanup goals in spring 2014; however, concentrations remained generally consistent with or below those detected from 2011 through 2013. RDX exceeded the CMD cleanup goal of 0.61 µg/L at 23.8 µg/L in MW 7-3, 35.3 µg/L in MW 7-7, 6.88 µg/L in MW 9-3, 26.4 µg/L in MW 10-3, and 3.68 µg/L in MW 21-5. Although RDX concentrations in these wells have fluctuated, overall, RDX concentration in each well has decreased since 2001.

Historically, metals have not been detected at concentrations above CMD cleanup goals at SWMU 10. Exceedances of the cleanup goals for arsenic and chromium have been limited to MW 7-12. Since MW 12-12 was installed in 2006, PCE, TCE, and 1,1-DCE have consistently exceeded their CMD cleanup goals. RDX was detected in eight wells at concentrations exceeding the CMD cleanup goal during the 2013 sampling events.

LUCs for the 1100 Area are specified in Section D(1) of the property deed.

SWMU Group 17 (Open Detonation Field)

The OD grounds are also referred to as the 2700 Area (SWMU 17) (see Figure J-1). The parcel size is approximately 569 acres, which includes the required explosives safety quantity distance arcs (ESQD) (up to 1,900 feet). Approximately 36 acres of the OD grounds are within the fenced area, with an additional 533 acres of ESQD outside the fenced area. This site is active and is used to treat off-specification and scrap munitions. The items to be treated are buried in an earthen pit and remotely detonated. After

detonation, scrap metal and other visible residues are removed. An annual 100 percent surface sweep is conducted within the fenced area and up to 200 yards outside the fence (TechLaw 2006).

In the CMD prepared by USEPA in April 2006, the corrective measures selected from the OD grounds included removal of contaminated soil, LTM, and LUCs as specified in Section D(1) of the property deed.

An RFA was completed in 1989. An RFI Phase I was completed in August 1994, and the RFI Phase II was completed in June 1998. Groundwater monitoring began in March 1999. The OD grounds were sampled during both the Phase I and Phase II of the RFIs (Final Report Phase II RCRA Facility Investigation LAW Engineering and Environmental Services, Inc. [LAW] 1998). A total of 15 subsurface soil samples, 11 surface soil samples (and 2 duplicates), and 7 groundwater samples (and 1 duplicate) were collected as part of the Phase I RFI. Phase II RFI activities included collection of 15 subsurface soil (and 2 duplicates), 9 surface soil (and 1 duplicate), 4 sediment, and 6 groundwater samples (and 1 duplicate). Analytical results of the Phase I and Phase II RFIs did not indicate presence of site-related constituents at concentrations exceeding background, industrial remediation goals, and/or maximum contaminant levels (MCL).

The groundwater samples collected for the Phase I RFI contained multiple metals exceeding background concentrations. Lead was the only metal detected at concentrations exceeding the MCL—in wells MW 10-1 and MW 11-1. Detection of lead in groundwater at elevated levels was not confirmed during the Phase II RFI. The higher lead concentrations detected during the Phase I RFI possibly traced to sampling techniques that potentially resulted in higher levels of suspended solids. A few VOCs, semi volatile organic compounds (SVOC), and explosive compounds, for which no screening criteria had been specified, were detected at concentrations below or slightly above their practical quantitation limit as part of the Phase I and II RFIs.

Currently, eight monitoring wells are sampled at this site: MW 10-1, MW 15-7, MW 16-6, MW 17-3, MW 17-7, MW 18-3, MW 19-3, and MW 20-3. The general direction of groundwater flow was to the southeast across the central part of SWMU 17 during the spring 2014 sampling event. The hydraulic gradient was approximately 0.037 ft/ft, or approximately 195 ft/mi. No COC was detected at a concentration exceeding its CMD goal in spring 2014.

During the spring 2014 sampling event and prior intermittent sampling events dating back to 1999, no VOCs or metals were detected above CMD cleanup goals. Similarly, no explosives were detected above CMD cleanup goals. One explosive, RDX, was detected in MW 20-3 during the fall 2013 groundwater monitoring event at a concentration exceeding the CMD cleanup goal. RDX is typically not detected in this well but has been detected on occasion at concentrations exceeding the cleanup goal.

The SI report (Site Investigation Report, Kansas Army Ammunition Plant Final URS 2008) included geophysical surveys and multi-incremental surface soil sampling in the OD grounds. The report concluded that based on the chemical data, significant threats to human health and the environment exist. No further action to assess environmental concerns in the OD grounds was recommended. However, geophysical data indicated potential for presence of munitions and explosive compounds (MEC) at the site, both within and outside the fenced area at the OD grounds. During preparation of the geophysical survey, a fused BLU-97 was discovered. A geophysical survey and soil sampling for explosives occurred in July 2009 in order to further characterize the site. A draft report of findings was generated (Open Detonation Grounds Baseline Survey Final Report for USACE ARA 2010). Analysis of 16 of the 151 soil samples collected displayed COC above action levels. The primary COCs were 2,4-dinitrotoluene, cadmium, 2,4,6-trinitrotoluene (TNT), and RDX. The industrial CMD action level was applied for those analytes for which CMD values had been specified (RDX, cadmium, and TNT). The Industrial Soil Regional Screening Level (SSL) was used for 2,4-dinitrotoluene (DNT), for which no CMD action level

had been specified. The 16 samples containing concentrations of COCs above action levels had been collected from 14 of the 60 borings placed adjacent to 11 of the 20 firing pits in the OD grounds.

In August 2009, approximately 160 soil samples were collected at 60 boring locations within the OD grounds. The soil samples were analyzed for explosives, total metals, and perchlorates. According to the analytical results, levels of TNT and RDX were found in seven samples at concentrations exceeding CMD cleanup goals. Concentrations of TNT above the CMD cleanup goal of 16 mg/kg ranged from 19 to 300 mg/kg. Concentrations of RDX above the CMD cleanup goal of 4.4 mg/kg ranged from 5 to 260 mg/kg. Cadmium was detected in two of the soil samples at concentrations (38.8 and 78.9 mg/kg) exceeding the CMD cleanup goal of 37 mg/kg. Perchlorate was not detected above the USEPA regional screening level (RSL) for industrial soil (ARA 2010).

In a separate investigation, perchlorate was detected in groundwater but at levels well below the Kansas Department of Health and Environment (KDHE) Risk-Based Standard for Kansas (RSK) value of 11 parts per billion (ppb).

LUCs for the OD grounds are specified in Section D(1) of the property deed.

SWMU Group 21 (Container Storage Area 1813)

Magazine 1813 (see Figure J-1) was permitted in 1989 for storage of hazardous wastes. The unit was clean closed in July of 2015. The magazine is constructed of wood columns and tile pilasters with 8-inch-thick tile walls on a 6-inch reinforced concrete floor slab poured over fill on grade. The roof is a pitched roof, laid over a wood truss system spanning the width of the building (i.e., there are no interior columns). Roofing materials are asbestos shingles over 2-inch tongue and groove sheathing, laid on 2- by 8-foot joists and stringers. Twelve metal ventilators are installed along the peak of the roof. The dimensions of the magazine are 216 feet by 50 feet by 1 inch, for an approximate floor area of 10,800 square feet. This unit is expected to be clean closed after reception of the closure report, so no further action will be necessary.

SWMU Group 21 (Container Storage Area Igloos 1914, 1915, 1916, 1917, 1958, 1961, 1974, and 1976)

Igloos 1914, 1915, 1916, 1917, 1958, 1961, 1974, and 1976 (see Figure J-1) were permitted for storage of hazardous wastes in 1989. Each of these igloos is constructed of poured concrete with arched ceilings. Each igloo's concrete walls vary in thickness from 8 to 16 inches, and rest on a concrete foundation. Each 6-inch-thick floor slab is 60 feet and 8 inches long by 25 feet and 6 inches wide, for an approximate floor area of 1,547 square feet. Each igloo is earth-covered to a minimum depth of 2 feet with 2:1 side slopes. The concrete floors in the igloos are pitched 0.5 inch from the center line to the troughs on the side of the igloos for drainage. The drainage troughs are 4 inches wide by 2 inches deep, and run the length of each igloo. Igloos 1914, 1915, 1916, 1917, 1958, and 1976 were utilized for storing containers with free liquids, and thus were constructed with a secondary spill containment system. Igloos 1961 and 1974 were utilized for storing containers with solids. These units were clean closed in July of 2015, therefore no further action will be necessary.

SWMU Group 21 (Container Storage Area 1816)

Magazine 1816 (see Figure J-1) will be permitted for storage of hazardous wastes upon issuance of this permit.

SWMU Group 21 (Container Storage Area Igloos 1934, 1935, 1936, 1942, 1967, 1969, 1970, and 1979)

Igloos 1934, 1935, 1936, 1942, 1967, 1969, 1970, and 1979 (see Figure J-1) will be permitted for storage of hazardous wastes upon issuance of this permit.

SWMU Group 21 (Container Storage Areas 2707, 2708, and 2709)

Container Storage Areas 2707, 2708, and 2709 (see Figure J-1) store hazardous wastes to be thermally treated at the OD grounds. All three igloos are constructed of poured reinforced concrete. The reinforced concrete slab walls are 6 inches thick and rest on an 8-inch reinforced concrete slab floor poured on fill on grade. The floor dimensions of each igloo are 6- by 6-foot, for a total floor space of 36 square feet. Ceiling height within the igloos is 7 feet. Each igloo is earth-covered to a minimum depth of 2 feet with 1:1 grass-covered side slopes. The igloos are used to store containers with no free liquids, although each igloo has a secondary containment consisting of a 2.5-inch concrete sill at the entrance. These igloos are small and provide only limited storage space, because of which a 2-foot-wide aisle is maintained for inspection purposes and to allow for movement of containers in and out of the igloos. These igloos were permitted in 1989 and will continue to be permitted under this new permit.

SWMU Group 24 (Burn Pad 6)

Burn Pad 6 is at the northeast edge of the D&Z facility adjacent to the permitted OD 2700 Area (see Figure J-1). It is within a fenced perimeter that also contains Burn Pad 5, which is not part of the D&Z facility. Burn Pad 6 measured approximately 350 feet long by 200 feet wide. It was surrounded on the east, north, and west sides by earthen berms approximately 5 feet high and approximately 30 feet wide. It is underlain by native soil and limestone bedrock at an average depth of approximately 12 feet on the western edge of the burn pad.

Burn Pad 6 was used for remote burning of explosive hazardous wastes within metal burn pans. The burn pad was put into service in 1967, and was used to burn explosive contaminated materials and waste that was too large for the Contaminated Waste Processor. In 2006, the installation cleared the vegetation from the berms of Burn Pads 5 and 6 through a controlled burn. With the vegetation removed, they discovered a significant amount of waste debris from the burn pad operations. The explosives safety officer indicated the debris could consist of materials potentially presenting an explosive hazard (MPPEH), including but not limited to ICM or sub-munitions, fuzes, detonators, boosters, propellant, blasting caps, and grenade bodies. Personnel walked the berms and picked up the debris from the surface of the berms. The burn pad was deactivated in 2007.

It is believed that in the early days of facility operation, these areas were used to open burn the “*off-spec*” munitions, but were not surrounded by earthen berms. At some point, it was decided that these areas should be surrounded by berms (assumedly for safety reasons). It is thought that soil was dozed from either side of the burn pad(s) to form the existing berms. Because munitions debris (MD) was found on the berms in 2006, it is thought that previously burned munitions had not been properly disposed of prior to construction of the berms. This may have resulted in incorporation of the previously burned munitions debris throughout the berm soils (Burn Pad 6 Corrective Measures Report, Burn Pad 6 and Burn Pad 6 Trenches, Kansas Army Ammunition Plant, CAPE 2014).

The entire D&Z facility’s December 1989 RCRA permit issued to the Department of the Army (after enactment of the Hazardous and Solid Waste Amendments [HSWA] of 1984) contained provisions for addressing releases of hazardous waste or hazardous constituents from SWMUs. USEPA completed an RFA in March 1989 that identified Burn Pad 6 as an SWMU requiring further investigation to determine the nature and extent of releases of hazardous waste or hazardous constituents. The Department of the Army completed all Phase I and Phase II RFIs including Burn Pad 6 in May 1998 (Law 1998 and Radian 1998).

In 2008, the Department of the Army ceased its operations at the D&Z facility as part of the Base Realignment and Closure (BRAC) Committee recommendations. A large portion of the property determined by KDHE and USEPA not to be impacted by hazardous waste operations or SWMUs was transferred to the Kansas Department of Wildlife and Parks in Parsons. All the remaining land where permitted hazardous waste operations occurred, either clean closure activities have begun as part of the transfer to the Great Plains Development Authority or transfer of the existing hazardous waste management permit will occur to a private entity for these operations to continue.

USACE submitted a final closure plan for Burn Pad 6 in April 2010 that was approved on May 24, 2010; the closure plan included adjacent areas identified by use of digital geophysical mapping (DGM) during a survey conducted in 2010. Twelve various sized trenches were excavated to remove the same materials removed from Burn Pad 6. Trench numbers 2, 3, 4, and 5 were east of Burn Pad 6; trench numbers 6, 7, 8, 9, and 10 were south of Burn Pad 6; and trench numbers 11, 12, and 13 were west of the burn pad.

Currently, for 1 year, USACE is responsible for semi-annually gauging and sampling the groundwater monitoring wells associated with SWMU 24. After that time, the data will be reviewed, and USACE will recommend to USEPA and KDHE whether or not to include SWMU 24 wells in the LTO/LTM program. A decision by these agencies regarding further monitoring was expected in early 2015.

AOC Water Tower #4

Water Tower #4 (see Figure J-1) is one of four Water Towers built in 1941; it is still used for water storage. The tower is enclosed within a secured fence. The ground surface at the base is covered with a 1- to 2-inch layer of gravel that was placed beneath the tower at the time of construction. As part of routine maintenance, the tower was periodically sandblasted and repainted. The tower reportedly was sandblasted in 1968 and 1982, with each sandblasting episode lasting approximately 4 weeks. As a result of sandblasting operations, lead-based paint residue may have accumulated at the base of the tower.

Lead investigations and removal actions have been conducted at each of the water towers. The investigation of lead at and around the water towers is described in *Phase II, RFI Investigation Report* (LAW 1998), and the interim removal action is discussed in the *Final Closure Report, Interim Soils Removal* (Environmental Chemical Corporation [ECC] 2004).

In January 2012, a *Corrective Measures Implementation (CMI) Report* was submitted by Cape Environmental Management Inc. (CAPE) on behalf of USACE, and was approved by KDHE Bureau of Environmental Remediation. Surface soils were removed if the composite grid sampling results exceeded the Industrial use standard of 1000 mg/kg for lead until a 400 mg/kg level of contamination was attained. Surface soils were not removed if the composite grid sampling results did not exceed the Industrial use standard of 1000 mg/kg for lead.

AOC Mercury Fulminate Disposal Site

According to interviews of former employees, the Mercury Fulminate Disposal Site is a reported disposal area thought to be located just northwest of the OD range, between the OD 2700 Area and an old landfill adjacent to approximately the center of the north property boundary (between SWMUs 17 and 16—see Figure J-1). No evidence has been found to support the employee claims.

AOC Old Ammunition Storage Area

As described in the 2006 Historical Records Review (HRR), the Old Ammunition Storage Area (see Figure J-1) was identified in the range inventory as encompassing 3.02 acres of land in the central portion of Kansas Army Ammunition Plant (KSAAP); however, based on an HRR site visit on October 19, 2005, and review of aerial photography, the location and acreage of the Old Ammunition Storage Area appears to have been misrepresented during the range inventory. Although a road/track appears to lead into the location of the phase 3 identified site, storage activity does not appear to have occurred at that location given the vegetation present and lack of visible access to the area. The actual location of the area appears to be farther west, closer to the fence of the igloo area, and the area encompasses approximately 26.76 acres.

According to the range inventory, this site was used as a storage area for munitions returned to the United States following WWII. Containers of munitions were placed in open storage at the site. KSAAP began using the area in 1945, but how long the containers of munitions were stored there is not known. An installation assessment of KSAAP, dated August 1978, mentioned an area east of the 1900 Area as used for open storage. The area was known as the “ARO” (ammunition returned from overseas). Based on the 1978 installation assessment, the area was used as a storage area for high explosive (HE) munitions returned after WWII. The munitions were reportedly stored on gravel pads. According to the 1978 installation assessment, the area was considered contaminated due to deterioration of the shipping containers and spread of the munitions around the area, and soil cultivation was restricted due to suspected unexploded ordnance (UXO).

The 1978 installation assessment referred to a photograph and a figure depicting the location of the storage area; however, these were not located during the research for the 2006 HRR. An aerial photograph, dated June 8, 1956, shows the area that was used as the Old Ammunition Storage Area. The area is crossed by what appear to be several dirt tracks that lead into three distinct areas. U-shaped features are apparent within each of the three areas; however, by 1956, storage of items evidently had ceased at the site.

Munitions were reportedly stored at the site long enough for the shipping and storage containers to decompose. The range inventory report stated that munitions were scattered throughout the site due to decomposition of the containers; however, the types of munitions stored at the Old Ammunition Storage Area could not be identified by KSAAP personnel at the time of the range inventory.

The Old Ammunition Storage Area is still used for cattle grazing, but the area has been fenced. During the HRR site visit in October 2005, the site appeared as undeveloped, and access to the area was limited by a closed gate and fence. According to interviews conducted at KSAAP for the HRR, interviewees stated that they had driven through the site, but had not observed discarded military munitions or scrap. Moreover, personnel stated that no work had been conducted to address munitions issues at the site.

Based on the HRR findings, further SI activities, including geophysical surveys and soil sampling, were conducted in 2007. Results of the SI field effort confirmed buried metal anomalies, but soil sampling did not reveal presence of explosives. In 2009, test trenches were advanced in the area of the geophysical anomalies. The test trenches uncovered only cultural debris such as nails and high iron containing soils. No MEC was unearthed during this investigation. A no further action (NFA) report has been approved by USEPA and KDHE.

AOC Quarry Operation

The Quarry Operation has recently been identified as an area with an outcrop of rock used occasionally for gravel and fill material at the D&Z facility. This area is located to the west of the OD grounds as shown in Figure J-1.

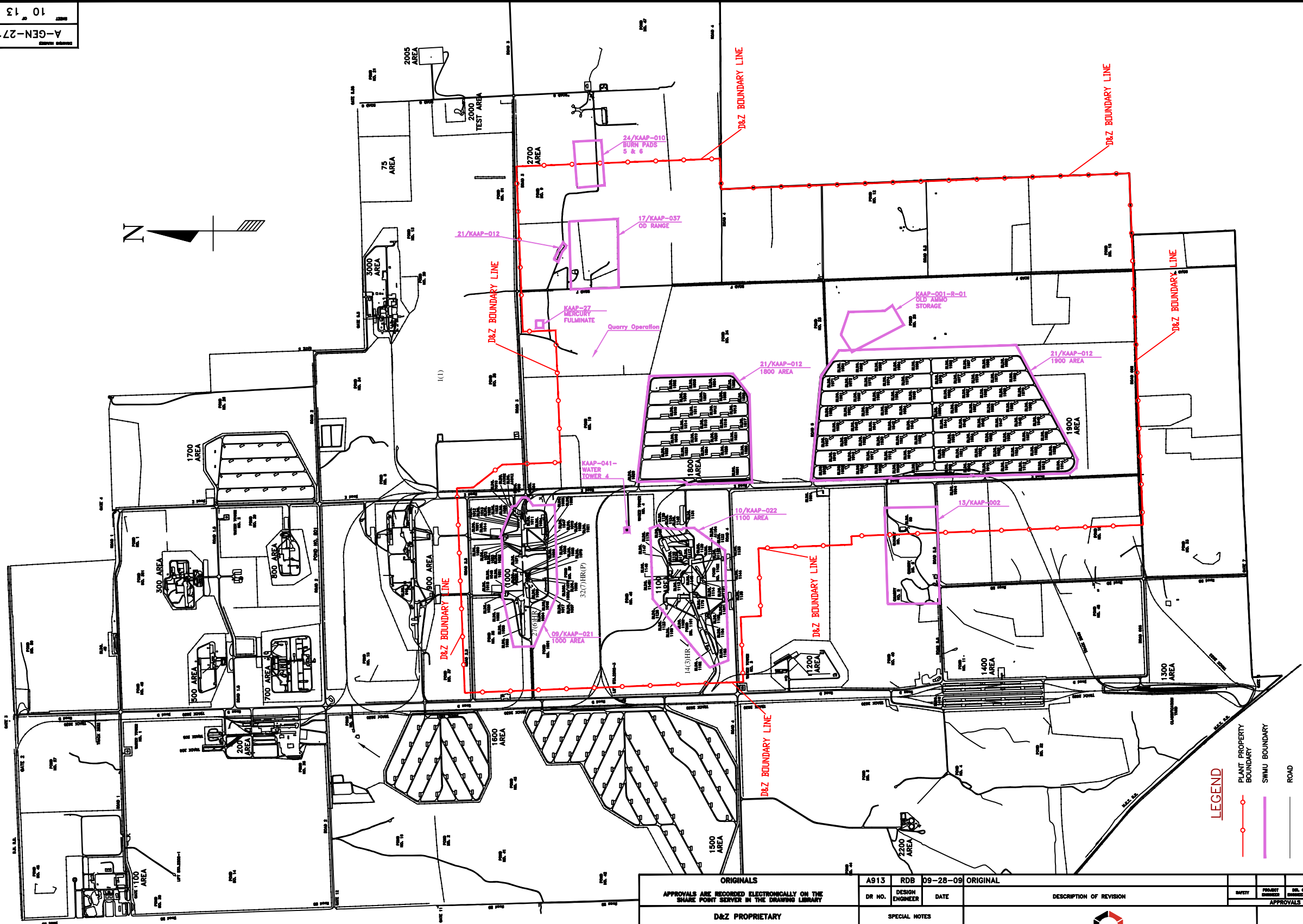
J-2 RELEASE [40 CFR §270.14(d)(2)]

As noted in the previous section, five SWMU groups are covered under this permit:

- SWMU Group 9 – 1000 Area
- SWMU Group 10 – 1100 Area
- SWMU Group 17 – Open Detonation Field currently in operation
- SWMU Group 21 –
 - Closed Container Storage Areas 1813, 1914, 1915, 1916, 1917, 1958, 1961, 1974, and 1976
 - Container Storage Areas 1816, 1934, 1935, 1936, 1942, 1967, 1969, 1970, and 1979 to begin operation upon permit issuance
 - Container Storage Areas 2707, 2708, and 2709 currently in operation
- SWMU Group 24 – Burn Pad 6 - Closed

All releases have been documented as part of the CMD, and were also described in Section J-1.

FIGURE



LEGEND

- PLANT PROPERTY BOUNDARY
- SWMU BOUNDARY
- ROAD
- RAILWAY
- FENCE
- SWMU SOLID WASTE MANAGEMENT UNIT

ORIGINALS				A913 RDB 09-28-09 ORIGINAL				APPROVALS - DAY & ZIMMERMANN, INC.			
APPROVALS ARE RECORDED ELECTRONICALLY ON THE SHARE POINT SERVER IN THE DRAWING LIBRARY				DR NO.	DESIGN ENGINEER	DATE	DESCRIPTION OF REVISION	SAFETY	PROJECT MANAGER	DIR. OF ENGINEERING	MANAGER QUALITY
D&Z PROPRIETARY THE INFORMATION CONTAINED IN OR DISCLOSED BY THIS DRAWING IS CONSIDERED PROPRIETARY BY DAY & ZIMMERMANN, INC. THIS DRAWING AND THE INFORMATION CONTAINED OR DISCLOSED HEREIN SHALL NOT BE USED, COPIED OR REPRODUCED IN WHOLE OR IN PART, NOR SHALL THE CONTENTS BE REVEALED TO ANY PERSON (WITH THE EXCEPTION OF THE U.S. GOVERNMENT) UNLESS WRITTEN PERMISSION IS OBTAINED FROM DAY & ZIMMERMANN, INC. DRAWING APPROVAL CONSTITUTES VERIFICATION OF DESIGN. ITAR-CONTROLLED DATA. EXPORT, RE-EXPORT OR DIVERSION CONTRARY TO THE PROVISIONS OF THE INTERNATIONAL TRAFFIC IN ARMS REGULATIONS (22 CFR 120-130) IS STRICTLY PROHIBITED.				SPECIAL NOTES STAMP MARK OR ETCH PIECE MARK ON EACH PART. BREAK ALL SHARP EDGES UNLESS OTHERWISE NOTED. APPLICABLE TOLERANCES UNLESS OTHERWISE NOTED. COMMON FRACTIONS 1/16 ONE DECIMAL 0.030 TWO DECIMALS 0.015 THREE DECIMALS 0.005 ANGLE 1°-4° SURFACE FINISH .125				 DAY & ZIMMERMANN KANSAS LLC 23018 ROOKS ROAD PARSONS, KANSAS 67357			
Site Wide Environmental Concerns FIGURE J-1				AREA GENERAL MARK SCALE NOTED				REV	DATE	BY	CHK
F				10 13 A-GEN-271				2			

APPENDIX J-1

CHECKLIST FOR REVIEW OF FEDERAL RCRA PERMIT APPLICATION

CHECKLIST FOR REVIEW OF FEDERAL RCRA PERMIT APPLICATIONS**SECTION J. SOLID WASTE MANAGEMENT UNITS**

Section and Requirement	Federal Regulation	Review Consideration^a	Location in Application^b	See Attached Comment Number^c
J-1 Characterize the Solid Waste Management Unit (SWMU)	270.14(d)(1)	Describe methodology used to determine that no existing or former SWMUs exist at facility if applicable.	Section J-1	
J-2 Releases	270.14(d)(2)	Provide following information concerning releases: date of release; type, quantity, and nature of release; groundwater monitoring and other analytical data; physical evidence of stressed vegetation; historical evidence of releases; any state, local, or federal enforcement action that may address releases; any public citizen complaints that indicate a release; and any other information showing the migration of the release. Describe methodology used to determine that releases from SWMUs are not present.	Section J-2	

Notes:

^a Considerations in addition to the requirements presented in the regulations.^b For each requirement, this column must indicate one of the following: NA for not applicable, IM for information missing, or the exact location of the information in the application.^c If application is deficient in an area, prepare a comment describing the deficiency, attach it to the checklist, and reference the comment in this column.